

# Iowa's Accident Location and Analysis System (ALAS)

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# ALAS “tool-kit”

- ◆ Access-ALAS (free)
- ◆ GIS-ALAS (free, but requires ArcView)
- ◆ Intersection Magic (IMW) (free, statewide license)
- ◆ CARE (Alabama) (coming soon, free, statewide license)
- ◆ Iowa Traffic Safety Data Service (ITSDS) (free, but major sponsors get top priority)
- ◆ Iowa Safety Management System (SMS) and Iowa DOT Office of Traffic and Safety (TAS)

# Access-ALAS

- ◆ Microsoft Access-based
- ◆ Written in-house @ Iowa DOT
- ◆ Run-time and freely distributed
- ◆ Intended for less sophisticated users
- ◆ Uses old node-link location system
- ◆ Produces tabular reports
- ◆ Map front-end nearly completed/completed (negates need for node-link location system)
- ◆ Planning of other updates in the works: VB-ALAS
- ◆ 250+ current users

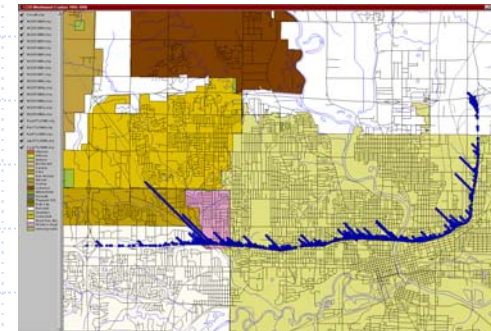
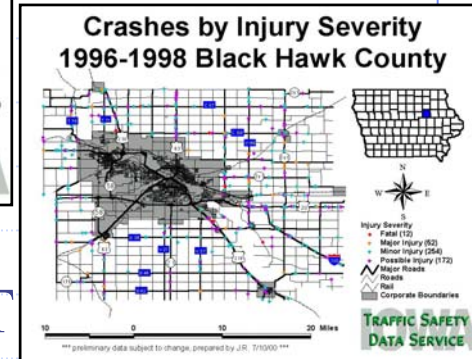
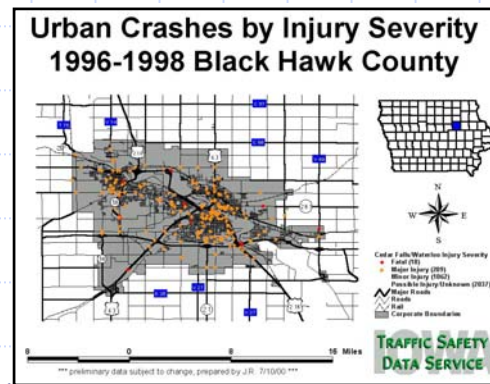
The image displays several overlapping screenshots of the Access-ALAS software interface. The visible forms include:

- Major Cause Summary:** A form with fields for 'Enter Node Name', 'Crash History for', and 'Crash History for'. It includes a 'Major Cause of Accidents' table with columns for 'Cause', 'Frequency', and 'Percentage'.
- DayTime and Accident Rate Summary:** A form with fields for 'Enter Node Name', 'Crash History for', and 'Crash History for'. It includes a 'DayTime and Accident Rate Summary' table with columns for 'DayTime', 'Accident Rate', and 'Crash History'.
- Surface and Light Condition Summary:** A form with fields for 'Enter Node Name', 'Crash History for', and 'Crash History for'. It includes a 'Surface and Light Condition Summary' table with columns for 'Surface Condition', 'Light Condition', and 'Crash History'.

The interface is designed for data entry and reporting, with a focus on accident analysis and road condition monitoring.

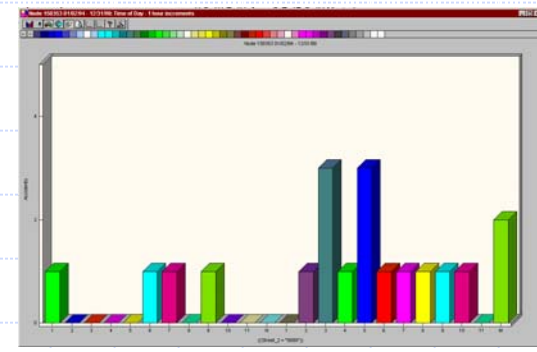
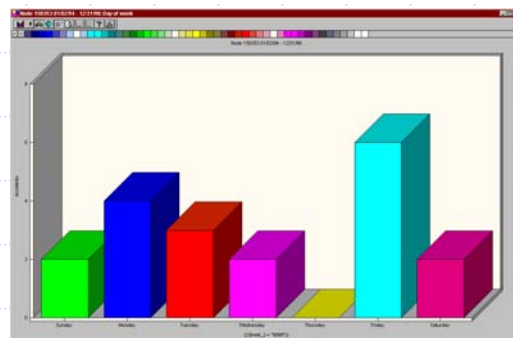
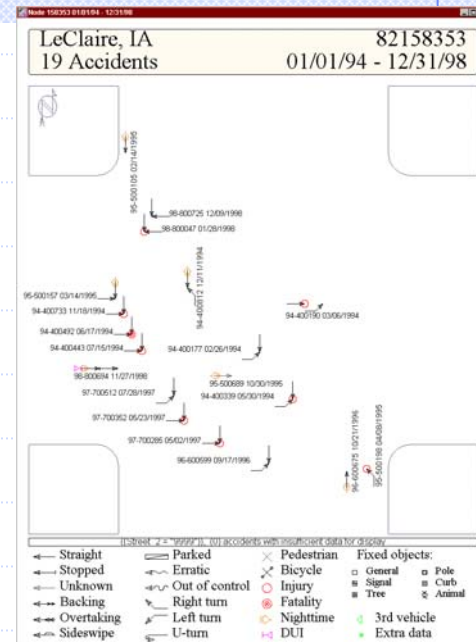
# GIS-ALAS

- ◆ ESRI ArcView GIS-based
- ◆ Written by CTRE and in-house @ Iowa DOT
- ◆ Freely distributed project/extension (but requires an ESRI ArcView license)
- ◆ Intended for more sophisticated users
- ◆ Allows user to add own additional layers
- ◆ Produces tabular reports and maps
- ◆ Configuration files to facilitate data updates (e.g., MMUCC)
- ◆ Updates currently underway (completion < 2-3 months)
- ◆ ~20 Beta users



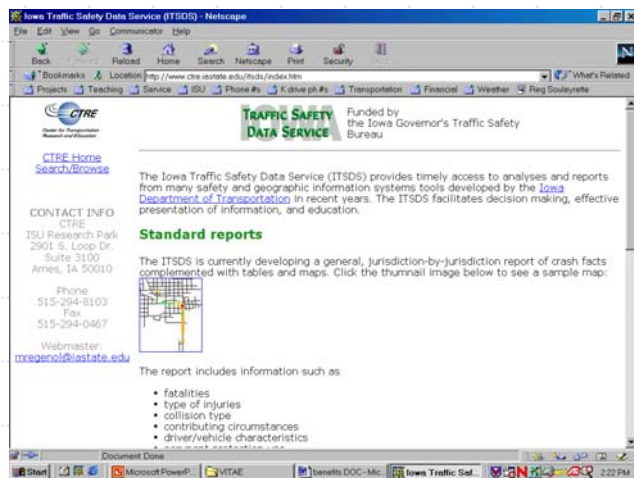
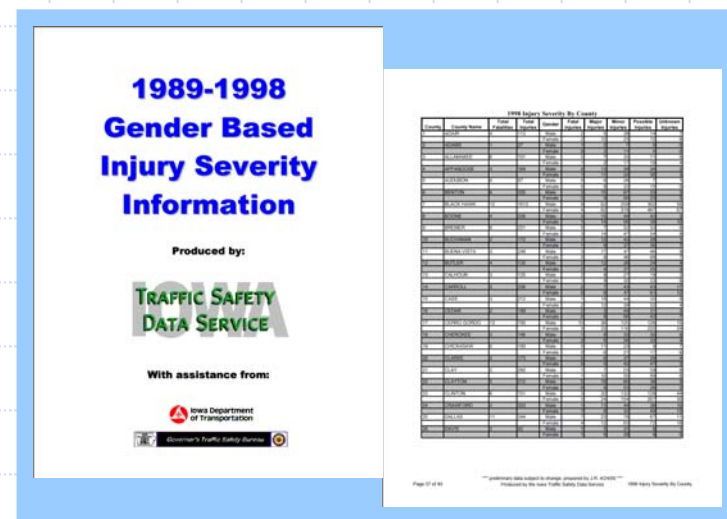
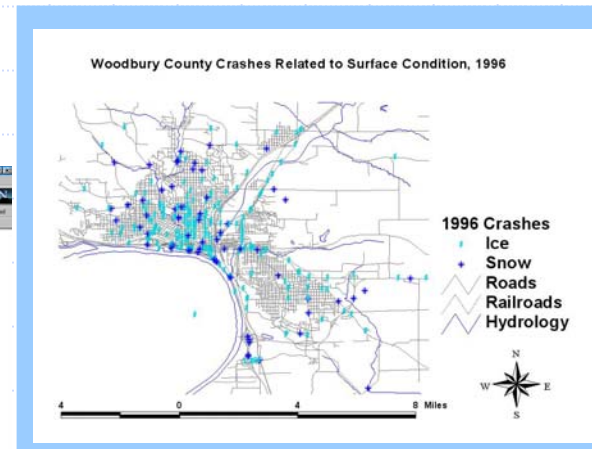
# Intersection Magic

- ◆ Vendor software (Pd' Programming)
- ◆ Configuration files updated by Iowa DOT
- ◆ Freely distributed (within constraints of Iowa statewide license)
- ◆ Intended for all users
- ◆ Uses old node-link location system
- ◆ Produces intersection collision diagrams and tabular reports
- ◆ Planning of updates in the works: tie into other ALAS tools
- ◆ 100+ current users



# ITSDS

- ◆ Operated at CTRE
- ◆ Paid for by Iowa GTSB
- ◆ Responds to requests from any entity needing crash data
- ◆ Produces maps and tabular reports for requesting entities

Hotline: (515) 294-5004

E-mail: [itsds@iastate.edu](mailto:itsds@iastate.edu)

Web: [www.ctre.iastate.edu/itsds](http://www.ctre.iastate.edu/itsds)

# Iowa SMS and TAS

- ◆ Requests made through TAS
- ◆ Requests from entities needing crash data
- ◆ Maps and tabular reports produced
- ◆ Examples are listed on Iowa SMS website (in PDF format): [www.iowasms.org](http://www.iowasms.org)



# CARE

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- ◆ “Vendor” software (University of Alabama)
- ◆ Statewide license and set-up in progress
- ◆ Freely available (within constraints of Iowa statewide license)
- ◆ Intended for all users
- ◆ Produces tabular reports and graphics
- ◆ Iowa usage mainly for system-wide and statewide analyses



# ALAS Steps

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- ◆ Indicate desired location
- ◆ Refine query/search parameters
- ◆ Request report
- ◆ Further refine/save/discard/print

# ALAS Development Timeline

## ◆ 1999 data

- Access-ALAS → in distribution
- GIS-ALAS → < 2-3 months (data available, program not)
- IMW → 2 weeks (in process, automatic dispersal to current users)

## ◆ MMUCC compliant data

- Access-ALAS → 1 year? (VB-ALAS)
- GIS-ALAS → < 2-3 months
- IMW → 1 year? (IMW-like tool attached to GIS and VB-ALAS)

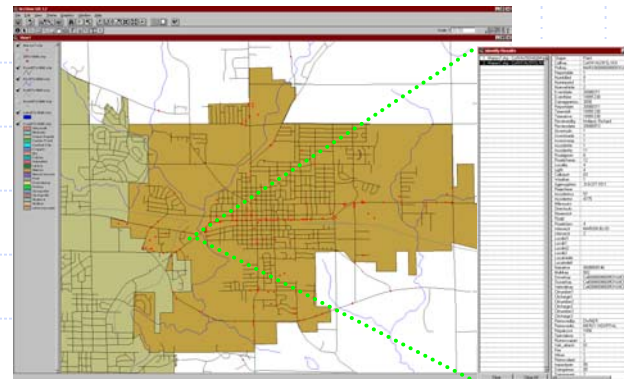
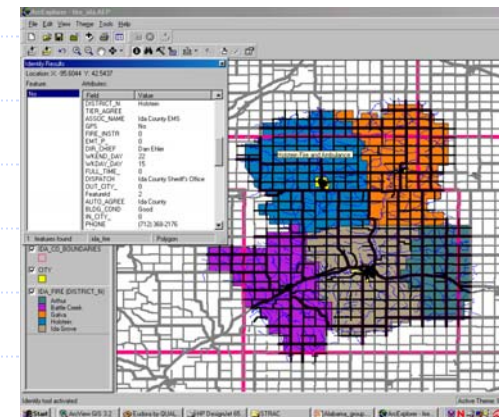
## ◆ Future

- combining all these into one
- adding CARE
- adding functionality (data, queries, reports, display)

# Other Iowa initiatives

- ◆ SMS/STRAC ([www.iowasms.org](http://www.iowasms.org))
- ◆ Emergency Response Information System (ERIS)
- ◆ “MMUCC” crash form (began 01/01/2001)
- ◆ Statewide Linear Referencing System (LRS)
- ◆ Location Tool (CTRE)
  - Traffic and Criminal System (TRACS)
  - EMS Data Client
  - CODES

The screenshot shows a web-based form titled "Table2" with tabs for General, Description, Personnel, Availability, Communications, and Service Sharing. The "General" tab is active, displaying a logo for the "Emergency Response Information System (ERIS)" and a form for "Henry County Ambulance". The form includes fields for ID, Service, Address 1, Address 2, City, Zipcode 5, Zip + 4, Contact, Phone, E-mail, EMS Director or Fire Chief, Director/Chief Phone, and a checkbox for "Service has a computer". The "Record: 14" of 8 is shown at the bottom.



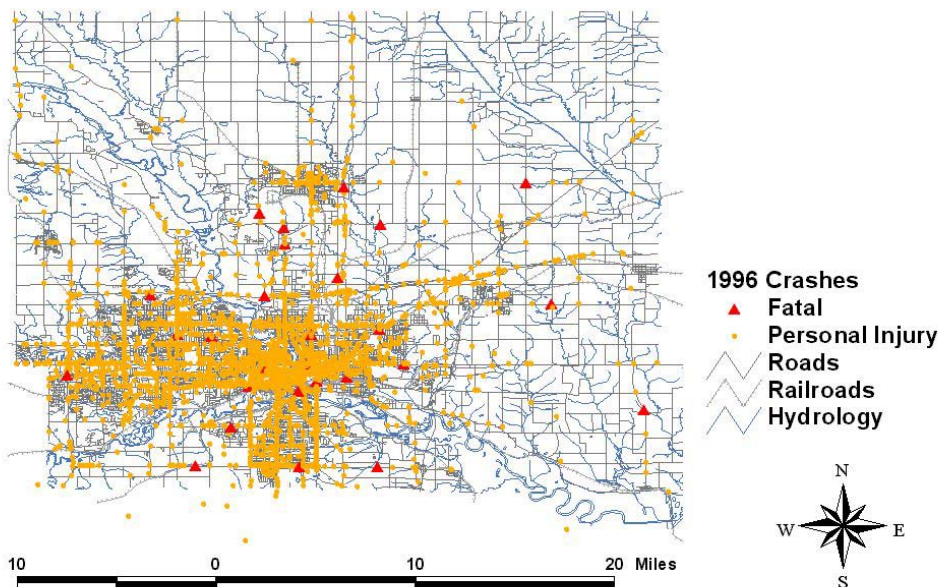
# Iowa DOT/CTRE Projects

- ◆ High Crash Location (HCL)
  - ◆ Red Light Running
  - ◆ Candidate Location Methods
  - ◆ Intersection Database Development
  - ◆ Access Management
- 
- ◆ All these use crash data but not necessarily ALAS tools

Iowa DOT: <http://www.dot.state.ia.us/>

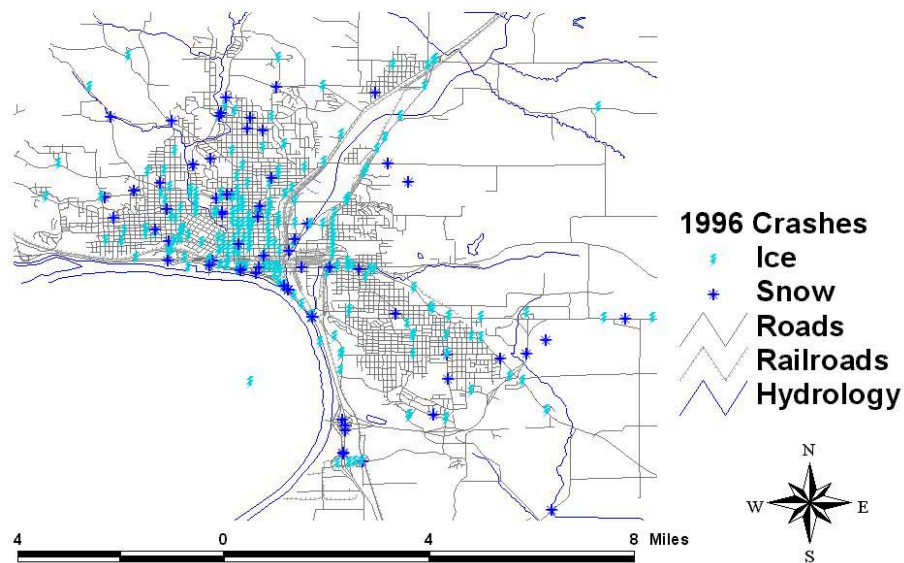
CTRE: <http://www.ctre.iastate.edu/>

## Polk County Fatal and Personal Injury Crashes, 1996

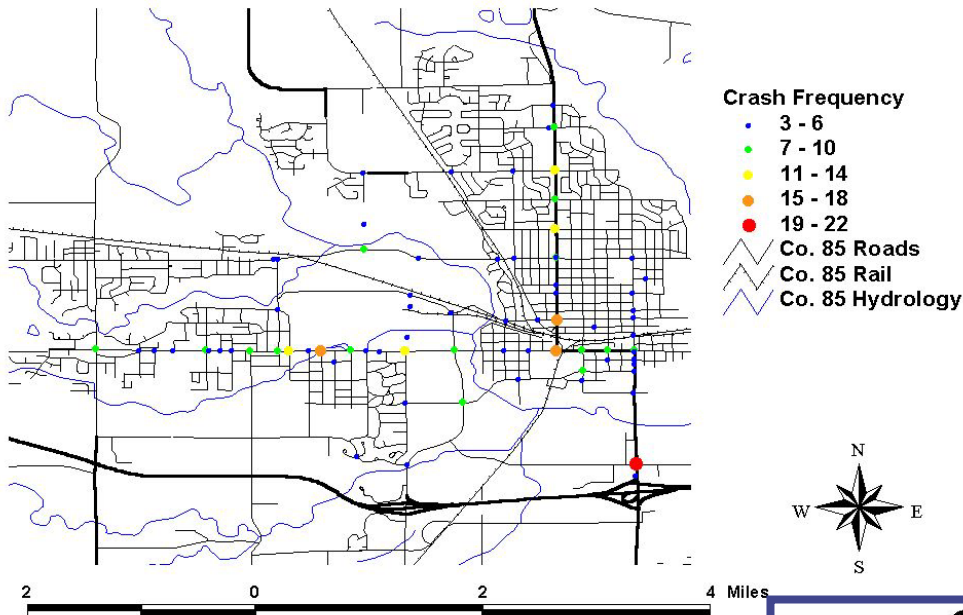


## GIS Accident Location and Analysis System (GIS-ALAS)

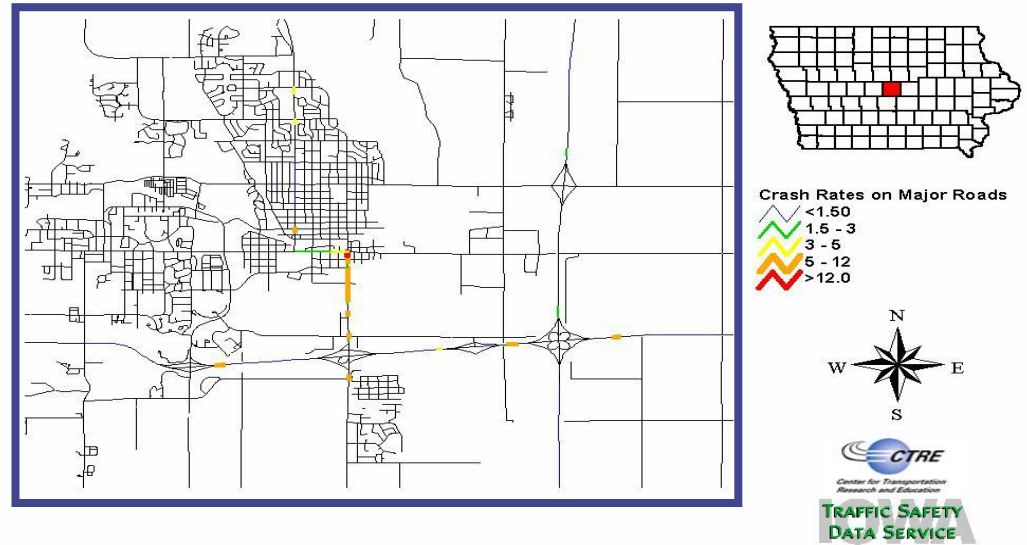
### Woodbury County Crashes Related to Surface Condition, 1996



# High Crash Locations Ames, Iowa 1997

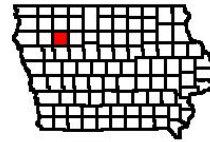
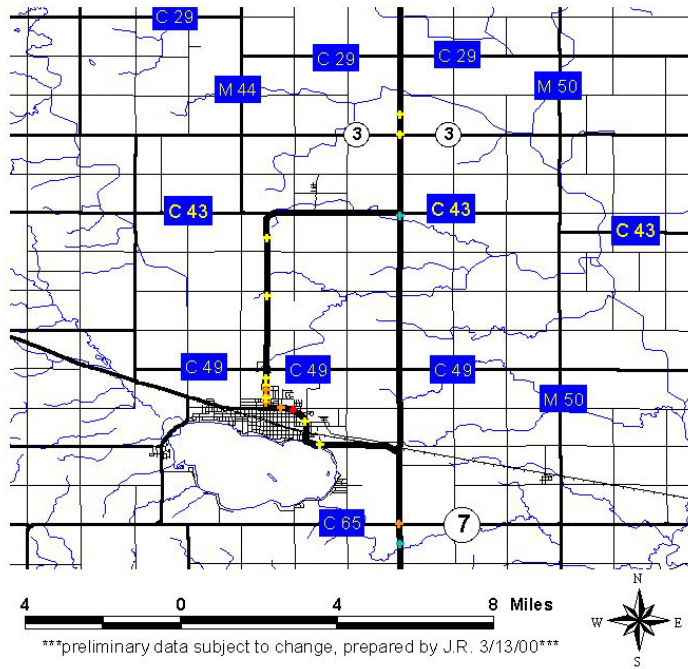


## Crash Rates on Major Roads 1994 Link-Based Crashes

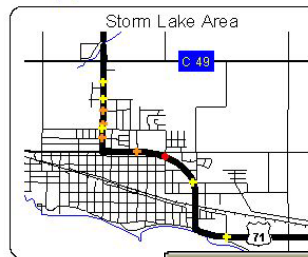




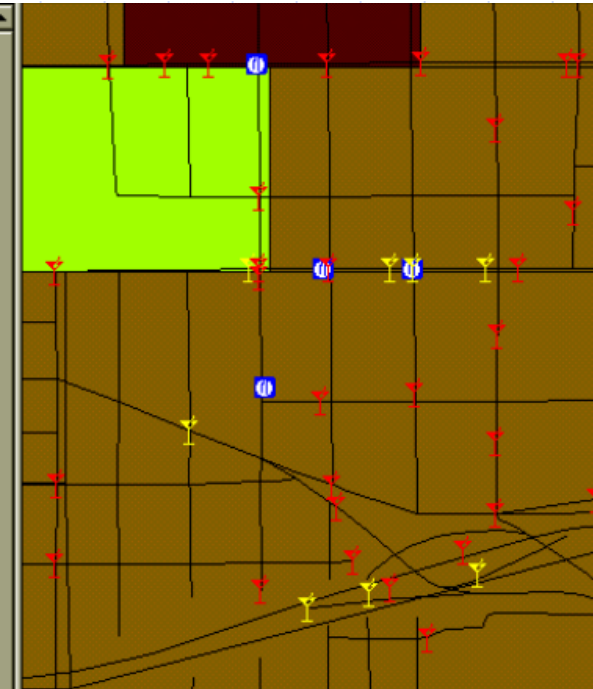
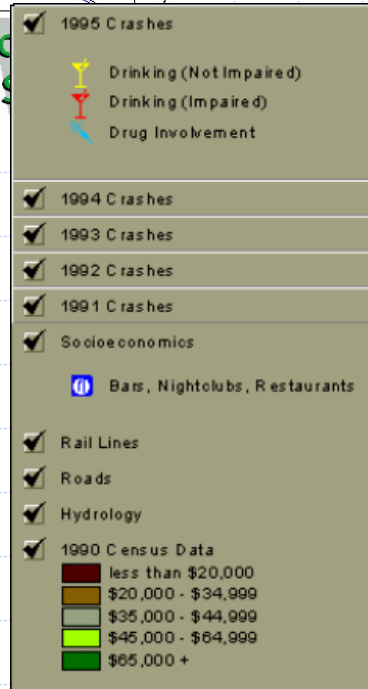
# US 71 Corridor Enforcement 1995-1997 Buena Vista County



Injury Severity  
 • Fatal (2)  
 • Major Injury (15)  
 • Minor Injury (43)  
 • Possible Injury/Unknown (94)  
 US 71  
 Major Roads  
 Roads  
 Rail  
 Hydrology

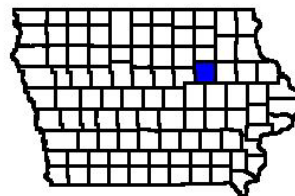
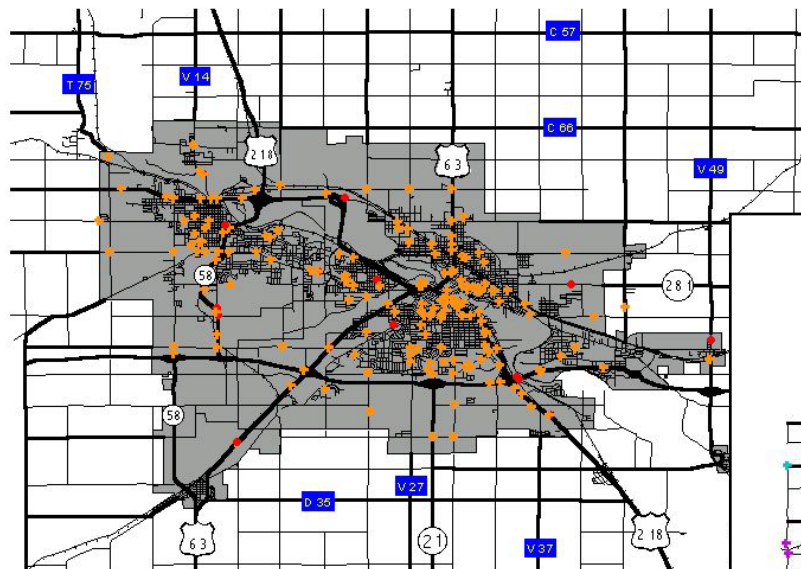


TRAFFIC  
DATA

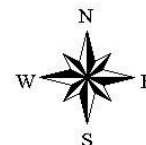
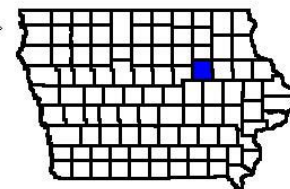
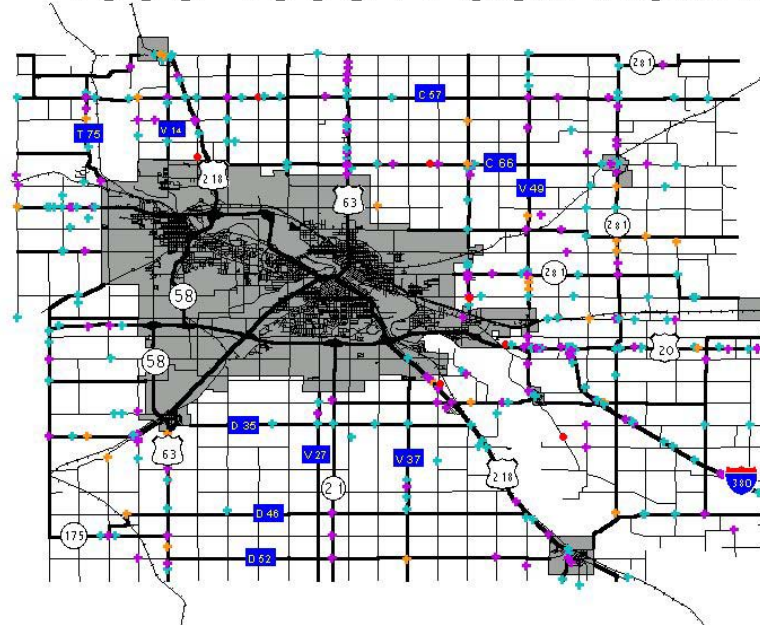




# Urban Crashes by Injury Severity 1996-1998 Black Hawk County



## Crashes by Injury Severity 1996-1998 Black Hawk County



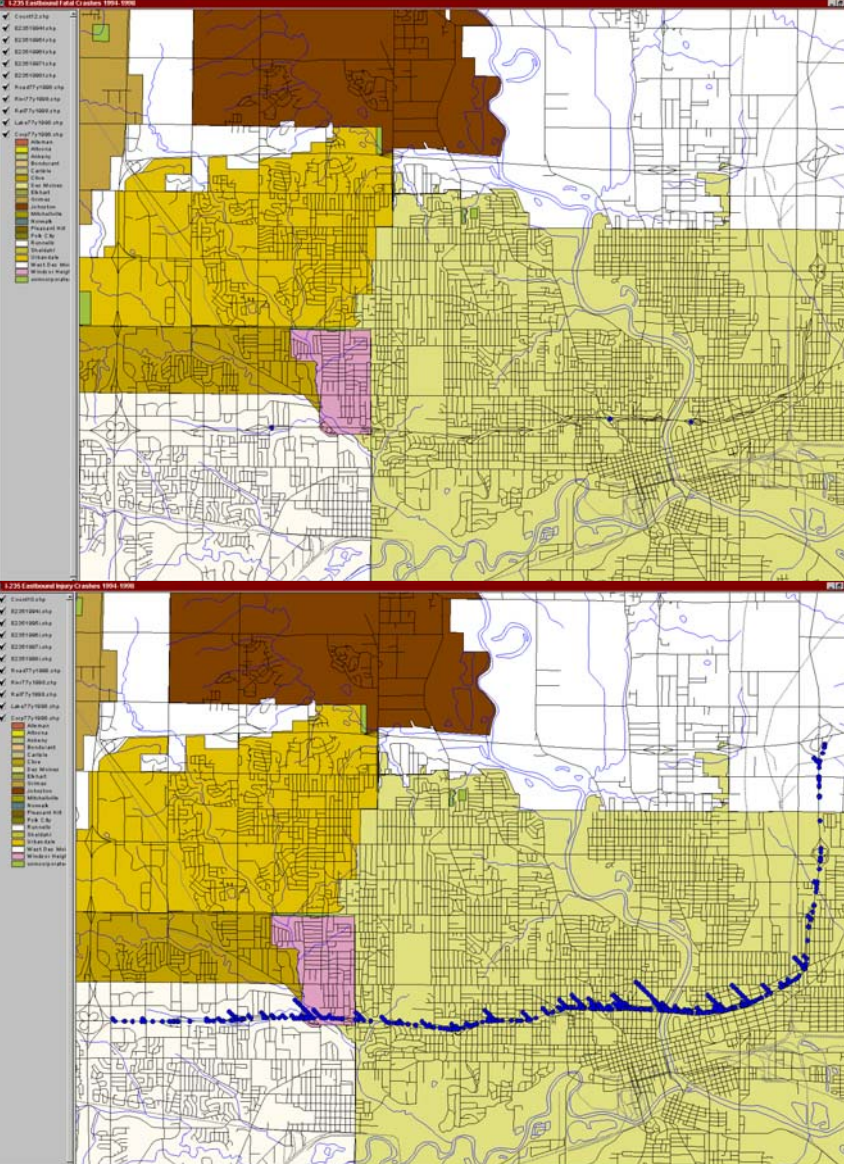
- Injury Severity**
- Fatal (12)
  - Major Injury (52)
  - Minor Injury (254)
  - Possible Injury (172)
- Legend:**
- Major Roads
  - Roads
  - Rail
  - Corporate Boundaries

**TRAFFIC SAFETY  
DATA SERVICE**

-produced for Sgt. Baskerville,  
Black Hawk Co. Sheriffs Office

\*\*\* preliminary data subject to change, prepared by J.R. 7/10/00 \*\*\*



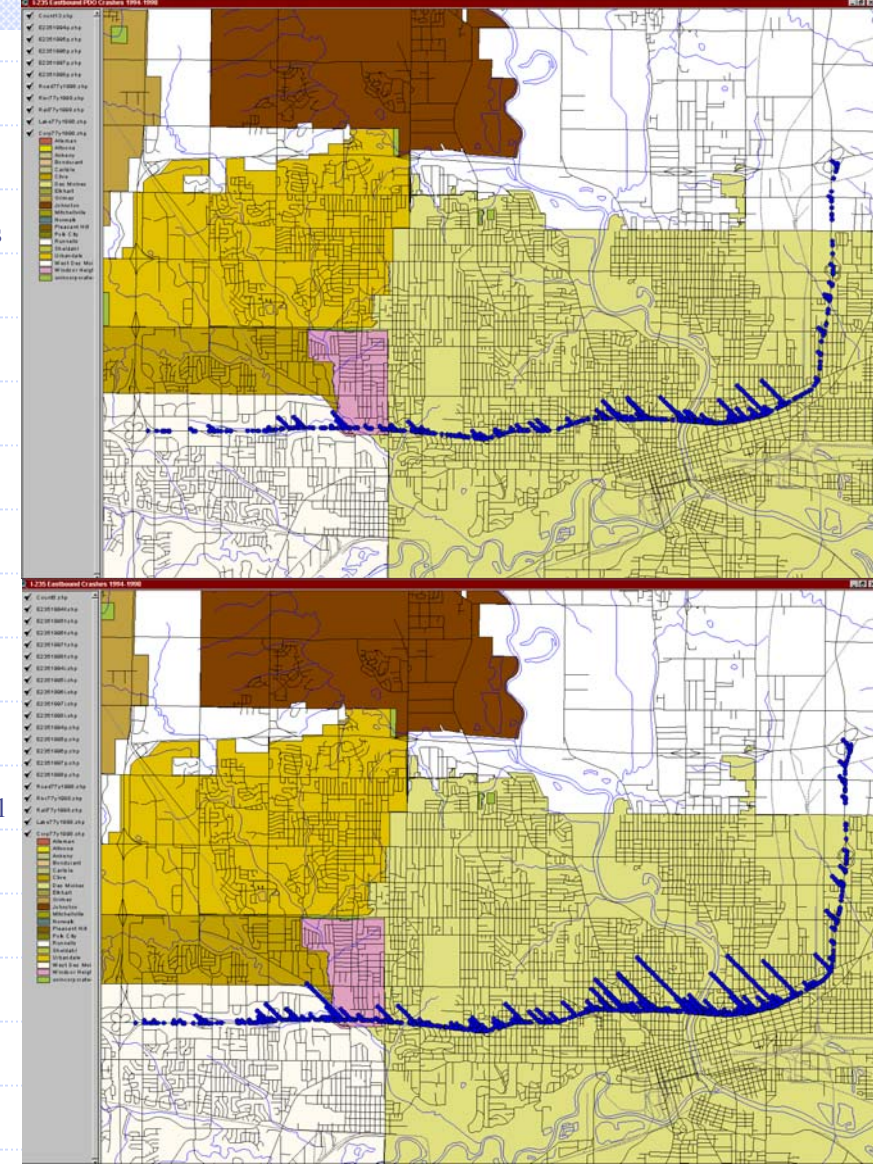


Fatals

PDOs

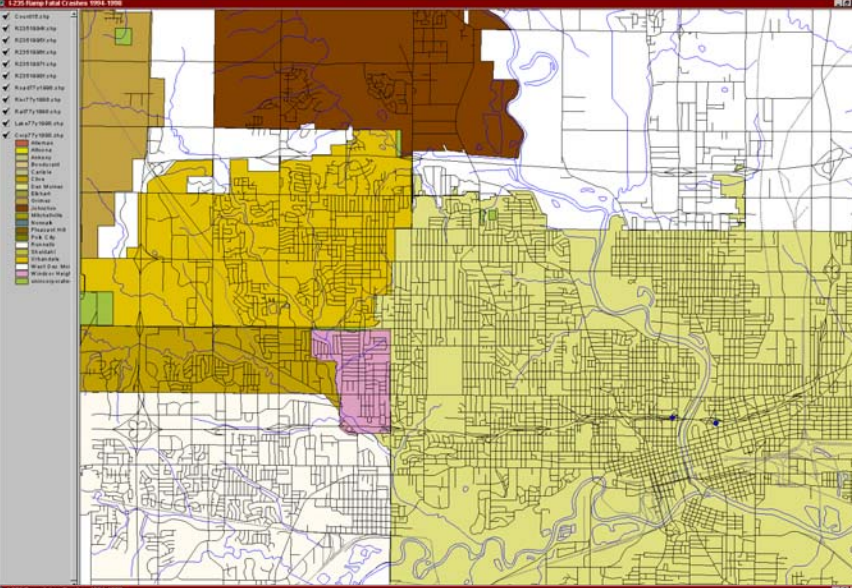
Injuries

Overall

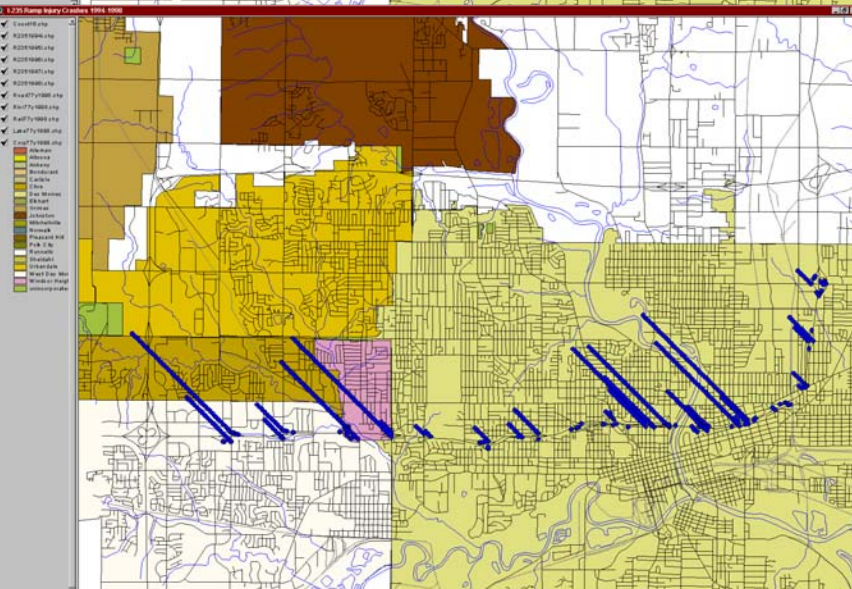


I-235 Eastbound

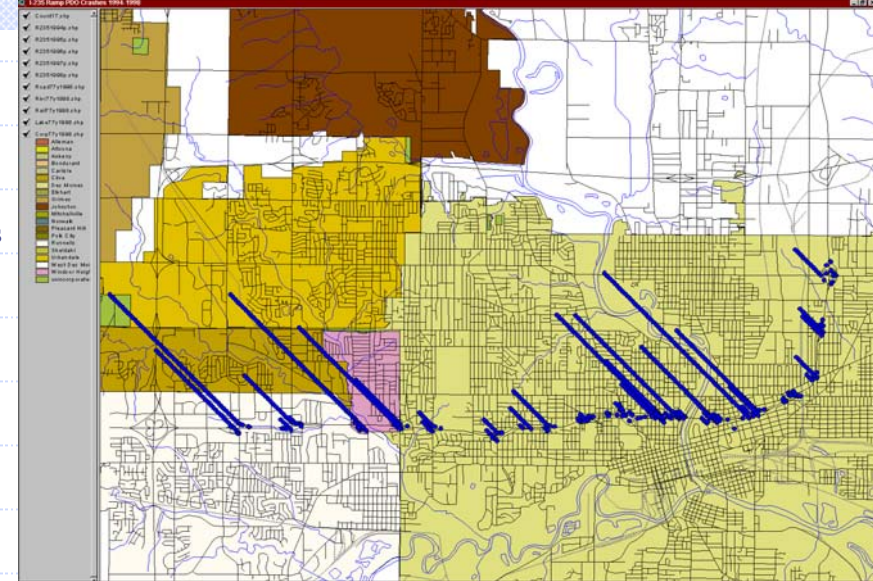




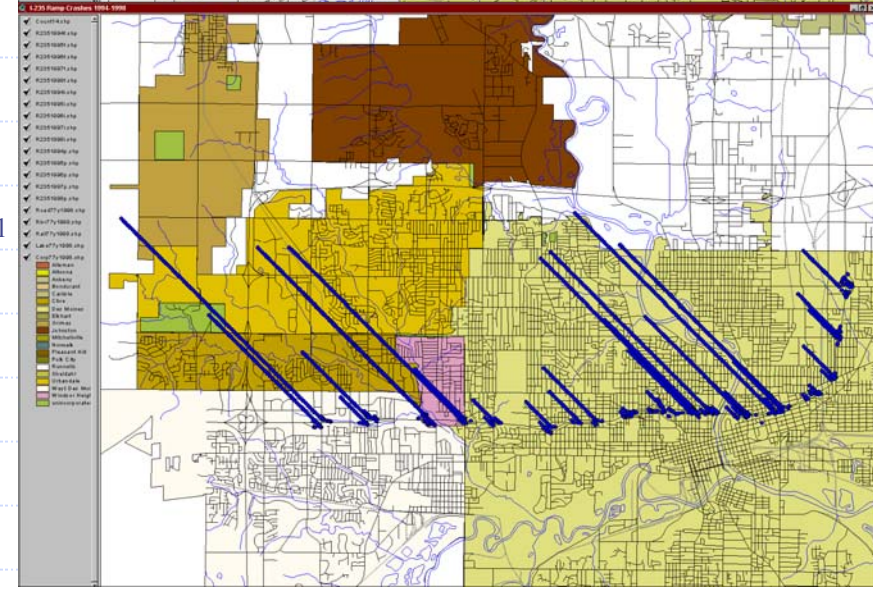
Fatals



Injuries



PDOs



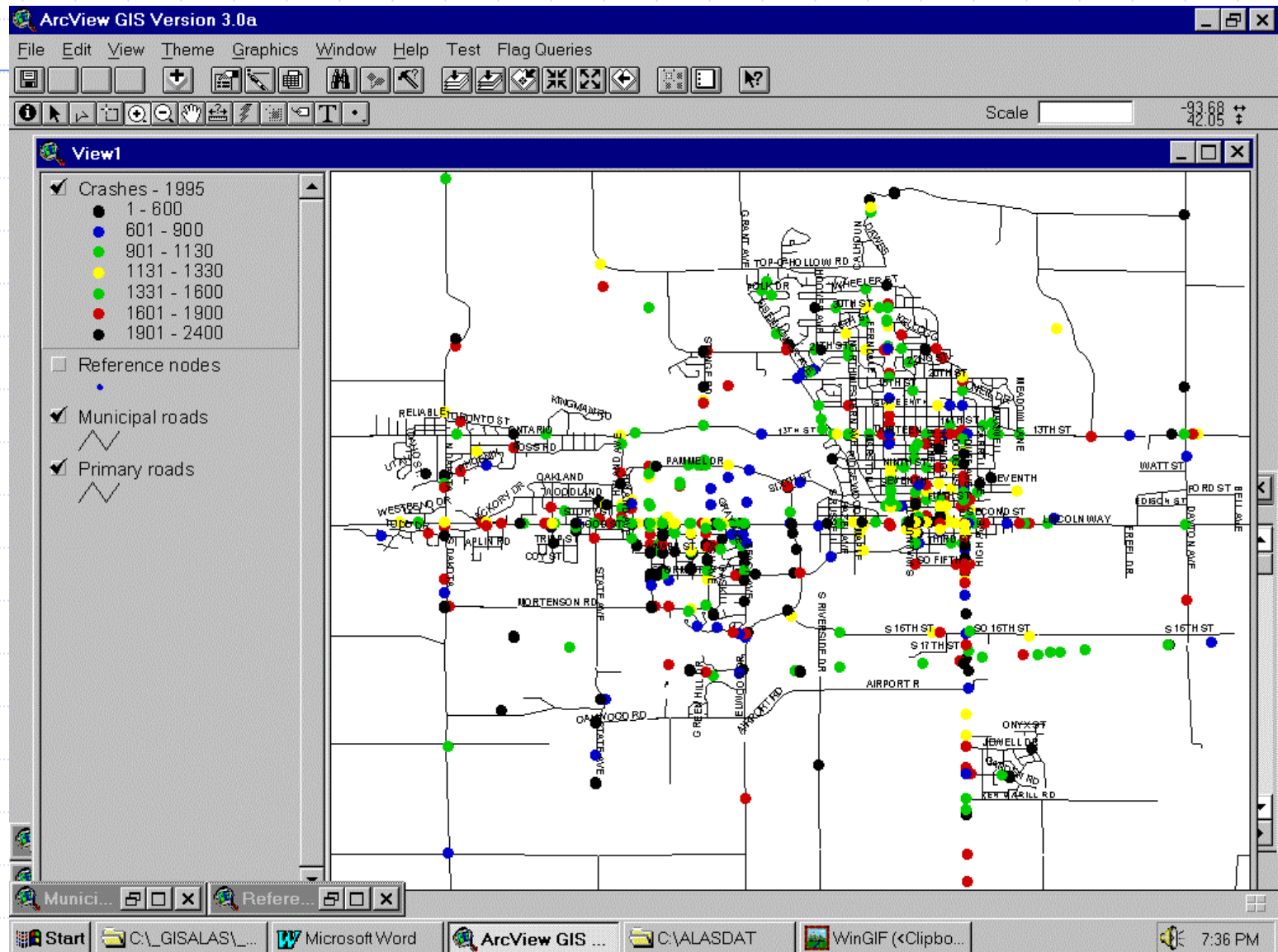
Overall

I-235 Ramps



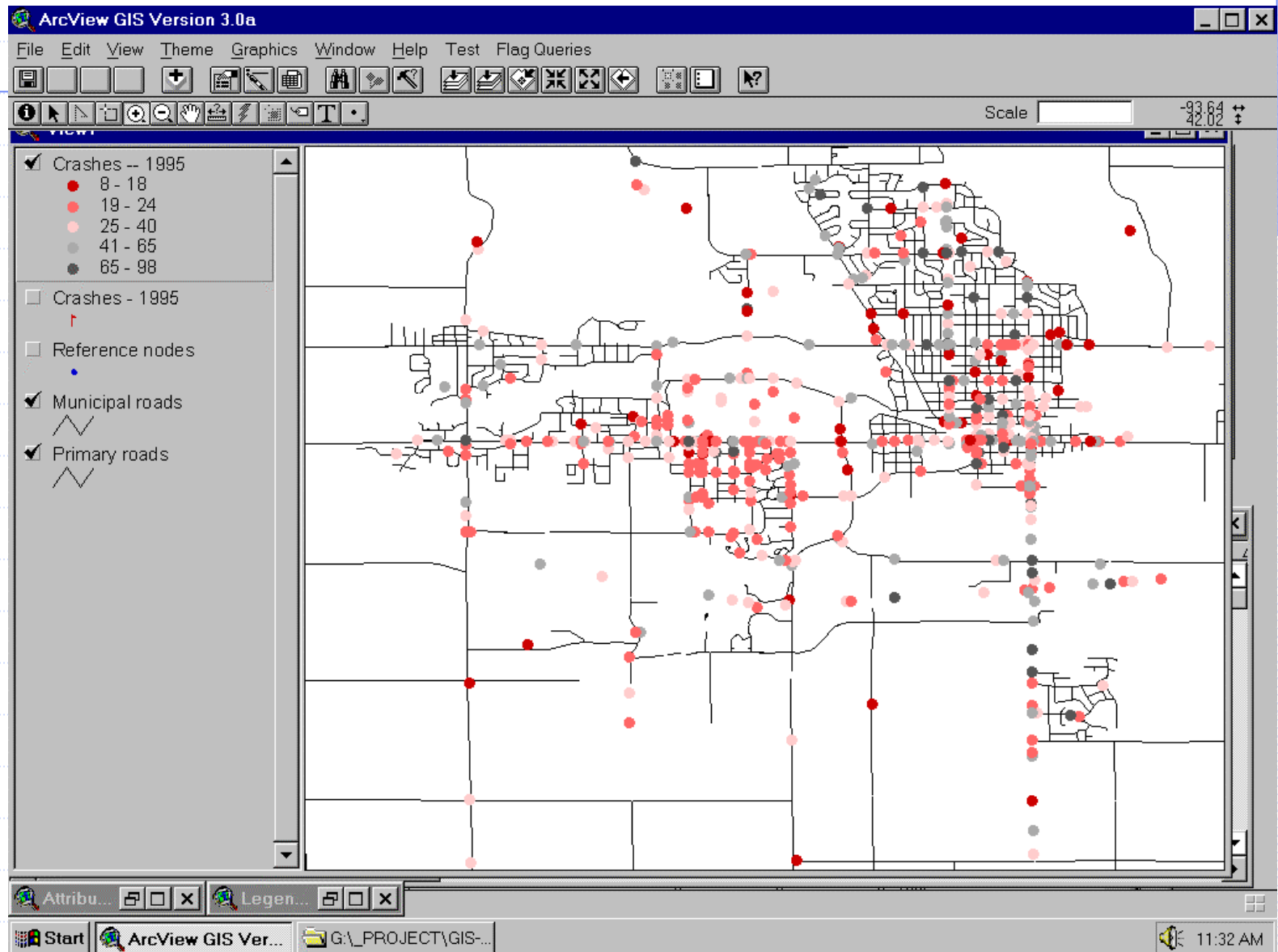


# Thematic Map - Crashes by Time of Day





# Thematic Map - Crashes by Age



# Aerial photo integration





Workzone Crash Summary  
1994-1998

	# of Crashes	# of Vehicles	# of Fatal Crashes	# of Injury Crashes	# of PDO Crashes	# of Fatalities	# of Injuries	# of Major Injuries	# of Minor Injuries	# of Possible Injuries	# of Unknown
1994	343	625	6	139	198	8	227	19	76	127	5
1995	373	645	1	169	203	1	266	23	91	149	3
1996	368	621	2	150	216	2	243	31	82	124	6
1997	353	628	7	151	195	10	258	21	74	148	15
1998	282	309	7	121	154	9	196	24	80	84	8
Total	1719	3028	23	730	966	30	1190	118	403	632	37
Mean	343.80	605.60	4.60	146.00	193.20	6.00	238.00	23.60	80.60	126.40	7.40
Std. Dev.	36.55	54.77	2.88	17.64	23.34	4.18	27.81	4.56	6.62	26.37	4.62

Workzone Crash Summary  
1994-1998

	0000-0059	0100-0159	0200-0259	0300-0359	0400-0459	0500-0559	0600-0659	0700-0759	0800-0859	0900-0959	1000-1059	1100-1159
Sunday	0	1	4	3	1	2	1	3	4	0	2	9
Monday	0	2	1	1	1	3	4	11	10	12	10	19
Tuesday	4	3	3	0	3	2	5	13	11	9	17	23
Wednesday	1	3	0	0	1	4	3	17	15	19	19	15
Thursday	1	2	2	2	1	2	7	10	15	21	10	16
Friday	2	3	3	2	1	3	6	19	13	10	18	18
Saturday	3	9	6	1	1	2	1	8	10	9	13	25
Total	11	23	19	9	9	18	27	81	78	80	89	125
Mean	2.20	4.60	3.80	1.80	1.80	3.60	5.40	16.20	15.60	16.00	17.80	25.00
Std. Dev.	1.66	2.99	2.30	1.24	0.94	1.36	2.87	7.37	6.14	8.56	8.13	9.36

	1200-1259	1300-1359	1400-1459	1500-1559	1600-1659	1700-1759	1800-1859	1900-1959	2000-2059	2100-2159	2200-2259	2300-2359	Total	Mean	Std. Dev.
Sunday	7	8	8	17	11	13	13	10	3	6	2	8	138	5.75	4.86
Monday	21	25	21	23	24	25	9	5	4	9	3	4	247	10.29	8.80
Tuesday	17	11	22	15	17	16	16	13	9	7	4	2	242	10.08	6.79
Wednesday	21	28	16	14	24	22	7	12	8	3	6	2	230	11.56	6.56
Thursday	23	17	24	21	33	35	14	6	6	6	6	6	230	11.56	6.56
Friday	13	14	26	38	32	30	26	12	7	6	6	6	230	11.56	6.56
Saturday	17	10	14	16	8	12	9	4	7	6	6	6	230	11.56	6.56
Total	119	113	131	144	149	155	94	62	44	42	42	42	1380	115.50	98.80
Mean	23.80	22.60	26.20	28.80	29.80	31.00	18.80	12.40	8.80	8.40	8.40	8.40	242	10.08	6.79
Std. Dev.	9.20	10.38	10.28	12.19	13.38	12.75	8.64	5.37	3.46	3.46	3.46	3.46	242	10.08	6.79

Workzone Crash Summary  
1994-1998

	January	February	March	April	May	June	July	August	September	October	November	December
1994	5	4	10	18	32	39	43	67	44	48	48	48
1995	3	4	9	13	39	52	60	62	48	48	48	48
1996	2	6	6	26	24	67	57	64	42	48	48	48
1997	10	3	4	20	47	67	36	60	43	48	48	48
1998	21	4	3	12	31	33	64	35	42	48	48	48
Total	22	21	32	89	175	278	260	288	219	219	219	219
Mean	4.40	4.20	6.40	17.80	34.60	55.60	52.00	57.60	43.80	43.80	43.80	43.80
Std. Dev.	3.36	1.10	3.05	5.67	8.73	14.10	11.94	12.90	2.49	2.49	2.49	2.49

Workzone Crash Summary  
1994-1998

	January	February	March	April	May	June	July	August	September	October	November	December
1	2	0	2	1	4	8	11	9	14	8	7	2
2	2	1	2	2	6	10	6	14	8	7	2	3
3	1	0	1	2	4	13	9	8	7	6	4	1
4	0	1	1	1	3	11	1	10	7	9	1	1
5	0	1	0	1	9	10	2	10	6	8	6	3
6	0	1	0	1	6	9	4	9	7	7	7	7
7	0	1	0	5	3	8	8	10	3	7	7	7
8	0	0	1	0	7	11	8	6	9	7	7	7
9	0	1	0	2	9	9	4	13	7	8	7	7
10	1	0	0	3	3	9	11	7	7	7	7	7
11	2	0	0	2	11	16	7	13	7	7	7	7
12	0	1	0	3	6	10	8	8	12	7	7	7
13	0	2	1	3	6	11	7	13	8	7	7	7
14	1	1	1	6	6	4	5	9	12	7	7	7
15	0	0	0	1	7	8	12	9	5	7	7	7
16	1	0	2	6	6	5	8	7	15	7	7	7
17	2	0	4	2	4	11	11	15	4	7	7	7
18	0	1	0	3	6	9	5	9	8	7	7	7
19	1	2	4	5	4	5	9	7	7	7	7	7
20	1	0	2	3	6	13	16	9	6	7	7	7
21	2	2	2	1	8	3	4	11	4	7	7	7
22	1	0	0	3	7	6	7	8	7	7	7	7
23	0	2	1	0	5	7	12	12	9	7	7	7
24	1	1	0	0	1	7	6	10	9	7	7	7
25	1	0	0	9	7	7	12	12	6	7	7	7
26	0	0	1	2	10	20	12	7	4	7	7	7
27	0	1	0	7	5	12	5	5	7	7	7	7
28	1	1	1	5	6	8	14	5	4	7	7	7
29	1	1	1	5	6	6	7	13	8	7	7	7
30	0	NA	4	5	4	10	13	6	4	7	7	7
31	1	NA	1	3	NA	16	4	NA	4	7	7	7
Total	22	21	32	89	173	278	260	288	219	219	219	219
Mean	4.40	4.20	6.40	17.80	34.60	55.60	52.00	57.60	43.80	43.80	43.80	43.80
Std. Dev.	3.82	3.61	5.59	15.25	29.38	47.25	44.50	49.19	37.22	37.22	37.22	37.22

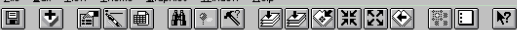
Workzone Crash Summary  
1994-1998

	Rural	Urban
1994	137	206
1995	176	197
1996	155	213
1997	144	209
1998	106	176
Total	718	1001
Mean	143.60	200.20
Std. Dev.	25.68	14.75

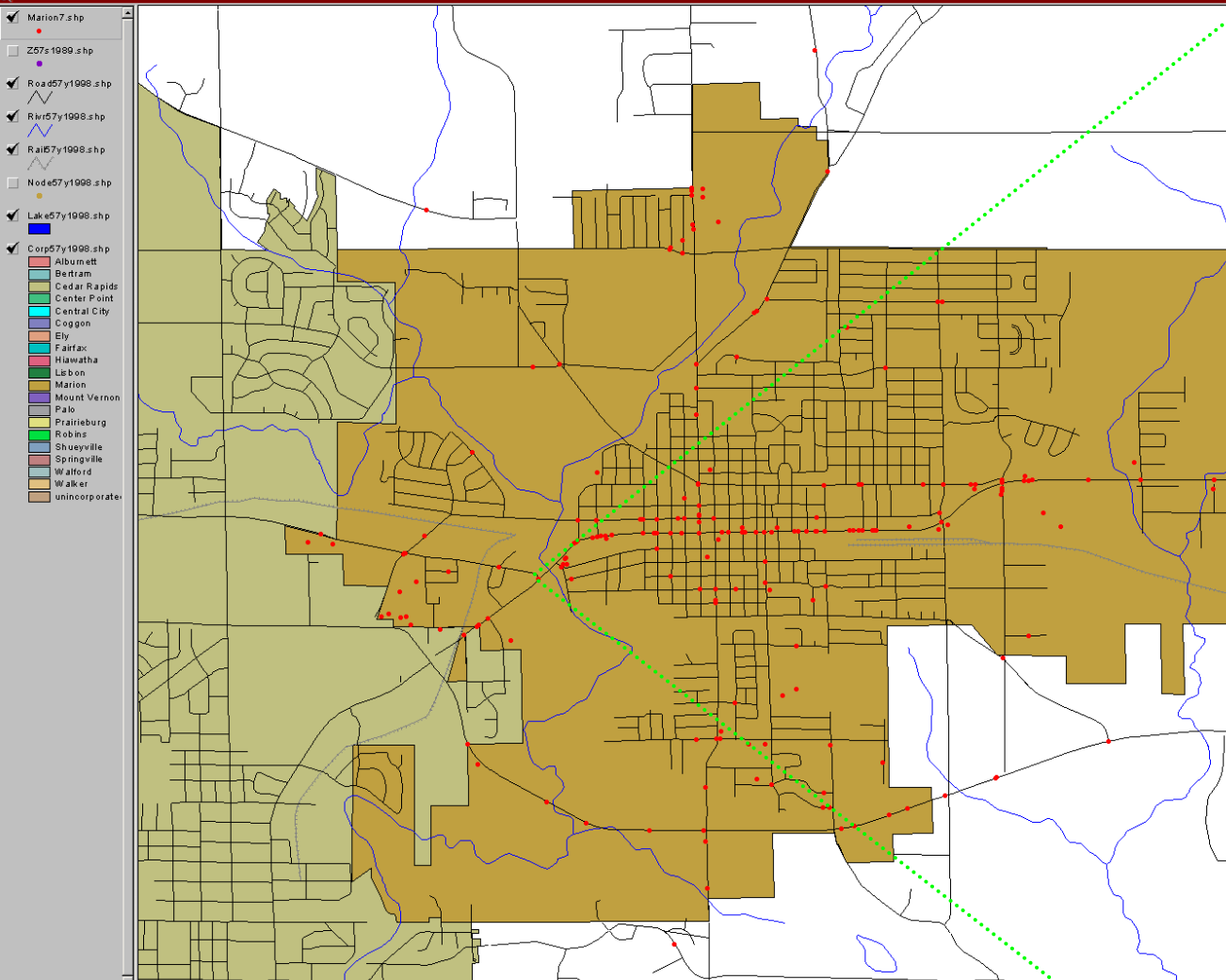
# Workzone Crashes 1994-1998

Workzone Crash Summary  
1994-1998

	1994	1995	1996	1997	1998	Total	Mean	Std. Dev.
Head-on	6	4	5	5	4	24	4.80	0.84
Head-on/Left Turn	8	11	15	12	15	59	11.80	2.58
Head-on/Right Turn	146	170	139	142	115	712	142.40	19.60
Rear End/Left Turn	2	3	1	2	3	11	2.20	0.84
Rear End/Right Turn	8	3	4	3	5	23	4.60	2.07
Sidewipe/Opposite Direction	0	0	1	3	1	5	1.00	1.22
Sidewipe/Same Direction	11	7	7	11	11	47	9.40	2.19
Sidewipe/Right Turn	5	2	6	5	1	19	3.80	2.17
Sidewipe/Left Turn	8	5	9	7	4	33	6.60	2.07
Sidewipe/Dual Left Turn	1	0	0	1	2	4	0.80	0.84
Sidewipe/Dual Right Turn	0	1	1	2	0	4	0.80	0.84
Broadside/Right Angle	29	22	29	19	17	115	23.00	5.34
Broadside/Right Entering	0	2	2	1	1	6	1.20	0.84
Broadside/Left Entering	0	3	0	4	3	10	2.00	1.87
Head-on/Left Entering	2	8	9	4	7	30	6.00	2.92
Sidewipe/Both Left	0	0	0	0	0	0	0.00	0.00
Turning	58	52	60	46	34	250	30.00	10.49
Other	46	71	61	69	48	295	39.00	11.60
Single	4	3	4	1	4	16	3.20	1.30
Pedestrian	0	0	1	1	0	2	0.40	0.55
Bicycle	15	10	21	21	13	80	16.00	4.90
Unknown	349	377	374	359	286	1745	349.00	37.01
Total	16.62	17.95	17.81	17.10	15.62			
Mean	12.28	15.14	14.37	14.25	9.68			
Std. Dev.								
Workzone Crash Summary 1994-1998								
Head-on	156	176	144	147	123	746	149.20	19.25
Rear End	25	15	24	29	19	112	22.40	5.46
Sidewipe	37	38	45	36	34	190	38.00	4.18
Broadside	58	52	60	46	34	250	50.00	10.49
Other	46	71	61	69	48	295	59.00	11.60
Single	4	3	4	1	4	16	3.20	1.30
Pedestrian	0	0	1	1	0	2	0.40	0.55
Bicycle	0	0	1	1	0	2	0.40	0.55
Unknown	15	10	21	21	13	80	16.00	4.90
Total	249	277	274	359	286	1745	349.00	37.01
Mean	38.70	41.89	41.56	39.19	31.70			
Std. Dev.	21.51	25.58	22.90	23.09	17.20			



View1



Scale 1:23,723

612,588.34  
4,857,392.15

Identify Results

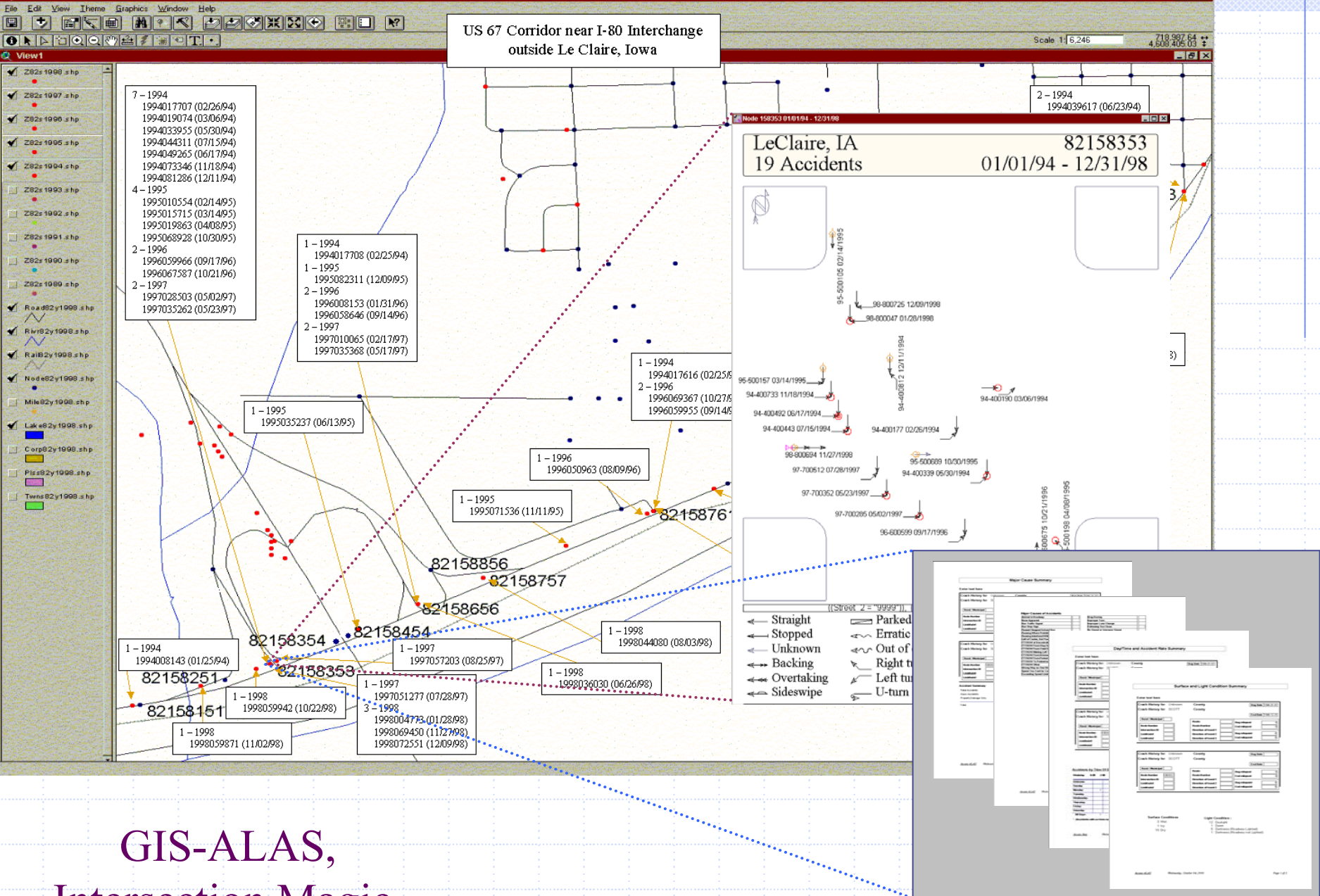
1: Marion7.shp - Col1HW50H6QMW  
2: Marion7.shp - Col1HYAU91SL1KH

Shape	Point
Colkey	Col1HYAU91SL1KH
Prdkey	MARS0000000000531U0CHE
Reportable	1
Numkilled	0
Numinjured	1
Numvehicle	2
Eventdate	20000311
Eventtime	18991230
Damageamou	3000
Reportdate	20000311
Timenotli	18991230
Timearrive	18991230
Reviewedby	Holland, Richard
Reviewdate	20000913
Giventodi	1
Investmade	1
Investcomp	1
Accidentlo	1
Accidentty	11
Roadgeom	8
Roadcharac	12
Locality	4
Light	4
Collision	03
Weather	1
Agencyphon	319-377-1511
Rejection	
Accidentco	57
Accidentci	4775
Milesoutci	
Directoutc	
Nearestcit	
Road	
Roadclass	4
Intersect	MARION BLVD
Intersectr	2
Locdist1	
Locdir1	
Locdist2	
Locdir2	
Localn mile	
Localn defi	
Narrative	0000000146
Multikey	002
Driverkey	Col000000000000531U0CHEZ
Dwnerkey	Col000000000000531U0CHEZ
Vehiclekey	Col000000000000531U0CHEFOL
Citnumber1	
Citcharge1	
Citnumber2	
Citcharge2	
Citnumber3	
Citcharge3	
Removedby	OWNER
Removedto	MERCY HOSPITAL
Repaircost	1000
Specialuse	1
Numoccupan	2
Veh_attach	01
Fire	1
Hitrun	1
Removalaut	2
Impactpoin	05
Damagareas	05
Damagseveri	2

Clear

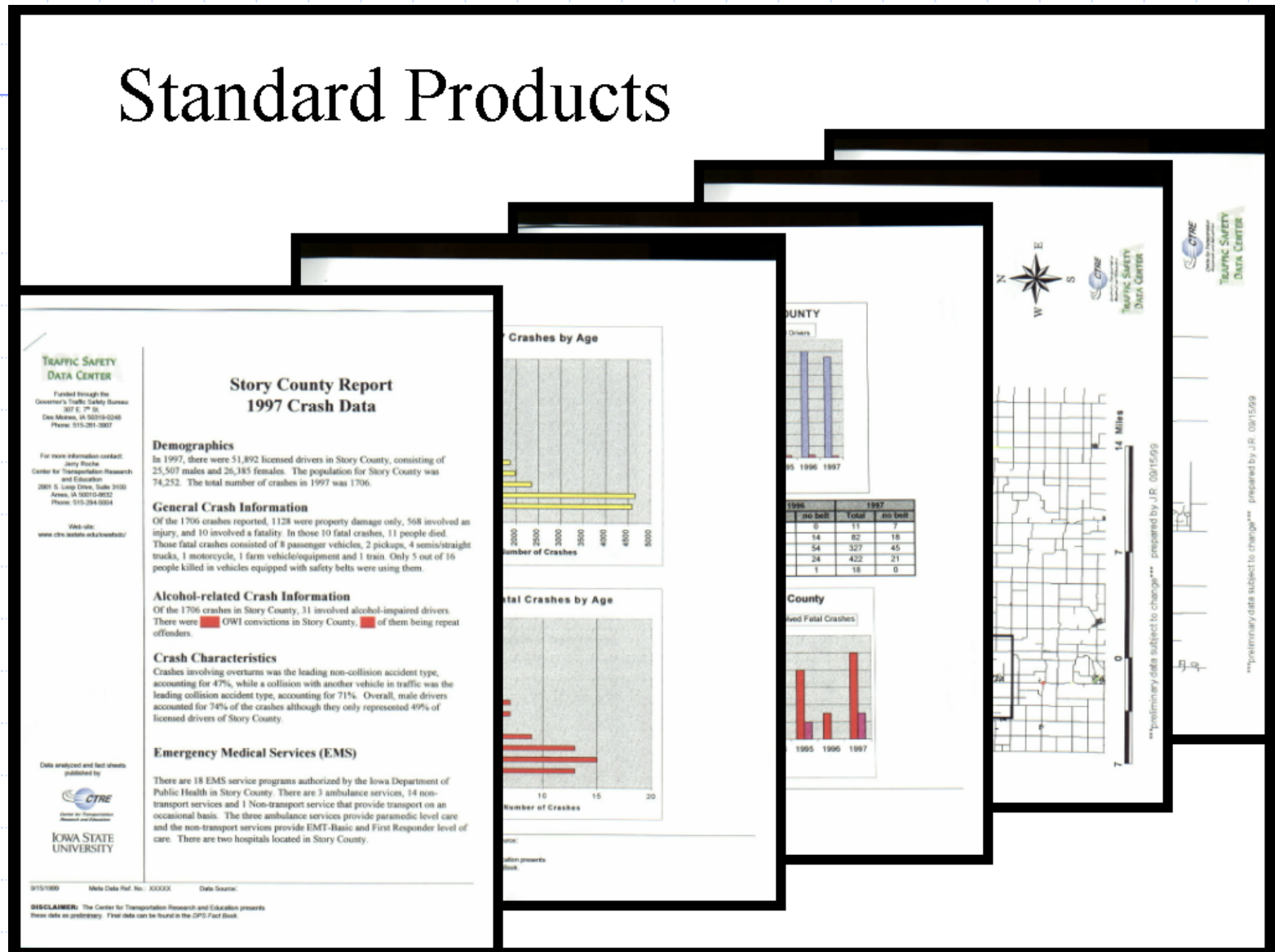
Clear All

Marion, IA Year  
2000 TRACS Data



GIS-ALAS,  
Intersection Magic,  
and Access-ALAS

## Standard Products





# 1989-1998 Gender Based Injury Severity Information

Produced by:



With assistance from:



1998 Injury Severity By County


County	County Name	Total Fatalities	Total Injuries	Gender	Fatal Injuries	Major Injuries	Minor Injuries	Possible Injuries	Unknown Injuries
1	ADAIR	4	113	Male	2	5	28	14	7
				Female	2	15	23	15	6
2	ADAMS	1	27	Male	1	2	7	0	0
				Female	0	2	11	5	0
3	ALLAMAKEE	6	101	Male	5	7	33	11	8
				Female	1	2	17	19	4
4	APPANOOSE	3	164	Male	2	13	39	34	2
				Female	1	11	32	30	3
5	AUDUBON	0	87	Male	0	6	28	7	1
				Female	0	8	22	15	0
6	BENTON	6	205	Male	3	15	67	33	3
				Female	3	9	50	23	5
7	BLACK HAWK	12	1613	Male	8	62	259	302	56
				Female	4	62	318	487	67
8	BOONE	4	226	Male	3	15	49	42	2
				Female	1	14	56	38	10
9	BREMER	8	221	Male	5	7	52	33	6
				Female	3	14	47	54	8
10	BUCHANAN	2	172	Male	1	12	42	28	1
				Female	1	9	37	36	7
11	BUENA VISTA	3	248	Male	3	17	47	46	9
				Female	0	8	46	68	7
12	BUTLER	4	135	Male	2	12	26	24	4
				Female	2	4	37	25	3
13	CALHOUN	3	125	Male	2	8	27	19	2
				Female	1	9	32	22	6
14	CARROLL	2	236	Male	2	7	43	43	17
				Female	0	6	47	61	12
15	CASS	3	212	Male	1	18	44	35	8
				Female	2	12	39	52	4
16	CEDAR	2	199	Male	2	3	49	31	3
				Female	0	8	56	42	7
17	CERRO GORDO	13	700	Male	10	36	125	126	15
				Female	3	33	116	225	24
18	CHEROKEE	3	146	Male	1	8	33	30	6
				Female	2	6	26	33	4
19	CHICKASAW	0	100	Male	0	11	23	9	7
				Female	0	6	21	17	6
20	CLARKE	2	173	Male	2	6	37	29	4
				Female	0	5	43	47	2
21	CLAY	2	282	Male	1	7	53	59	8
				Female	1	10	50	89	6
22	CLAYTON	5	212	Male	5	18	60	36	5
				Female	0	9	53	28	2
23	CLINTON	6	751	Male	3	32	132	128	44
				Female	3	24	154	207	30
24	CRAWFORD	2	203	Male	1	11	44	36	10
				Female	1	8	32	49	13
25	DALLAS	11	344	Male	7	23	78	67	11
				Female	4	12	63	72	18
26	DAVIS	2	92	Male	1	5	31	9	1
				Female	1	9	28	9	0

\*\*\* preliminary data subject to change, prepared by J.R. 4/24/00 \*\*\*

# ERIS-Emergency Response Information System

Table2

General Description Personnel Availability Communications Service Sharing



ID

Service

Address 1

Address 2

City

Zipcode 5

Zip + 4

Contact

Phone

E-mail

EMS Director or Fire Chief

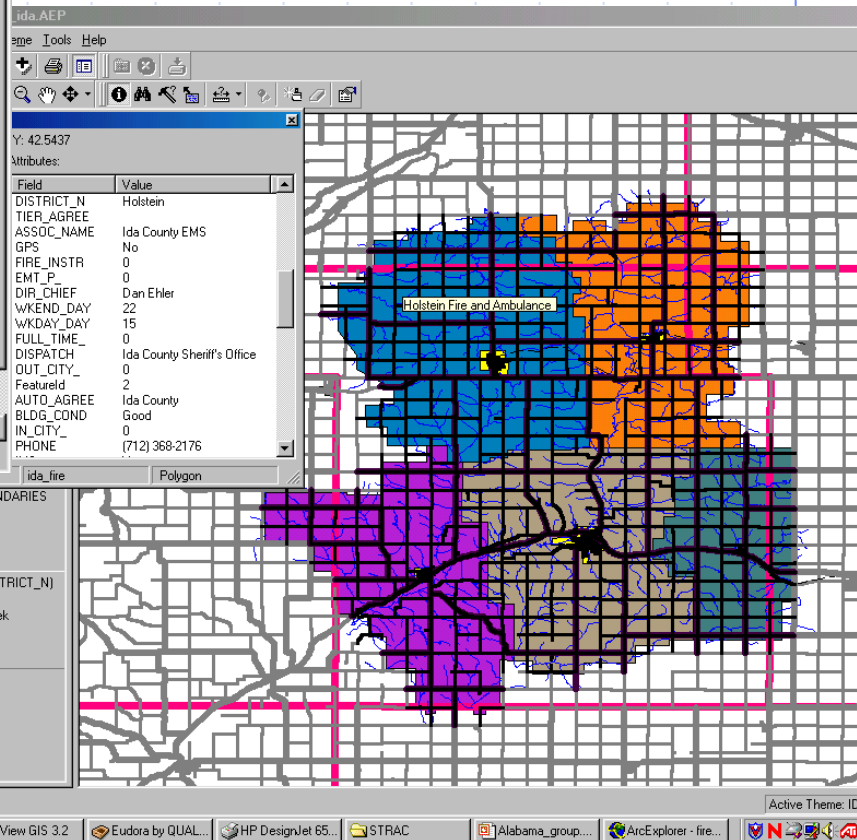
Director/Chief Phone

Service has a computer

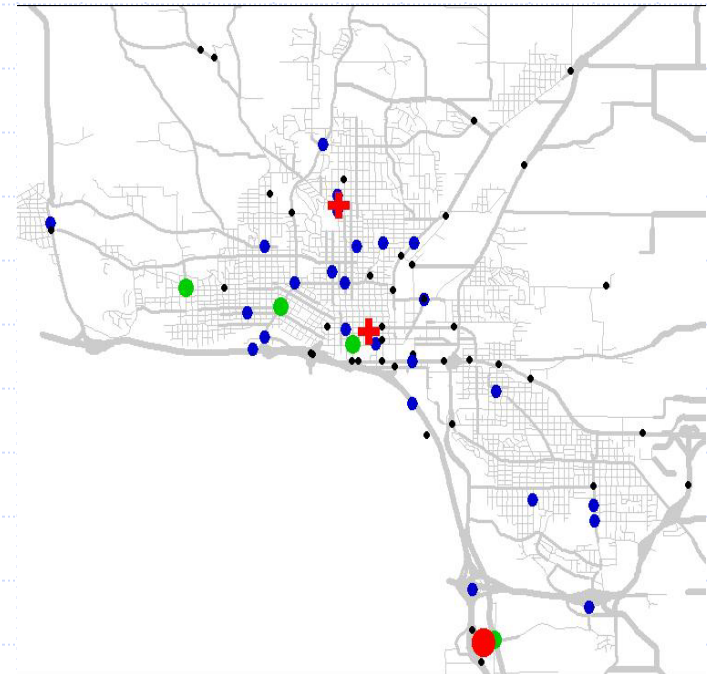
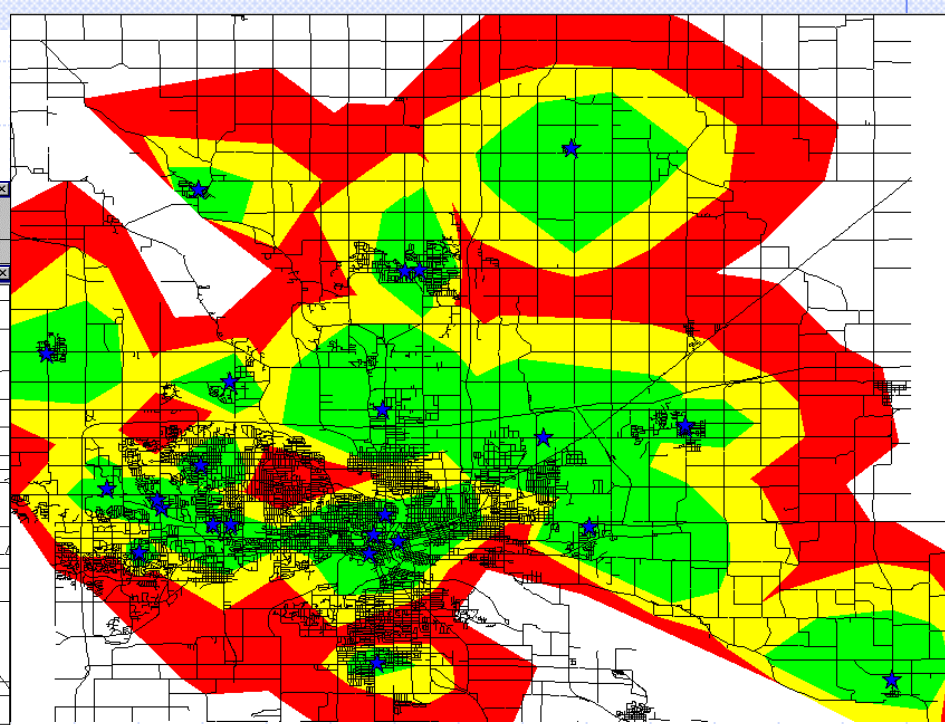
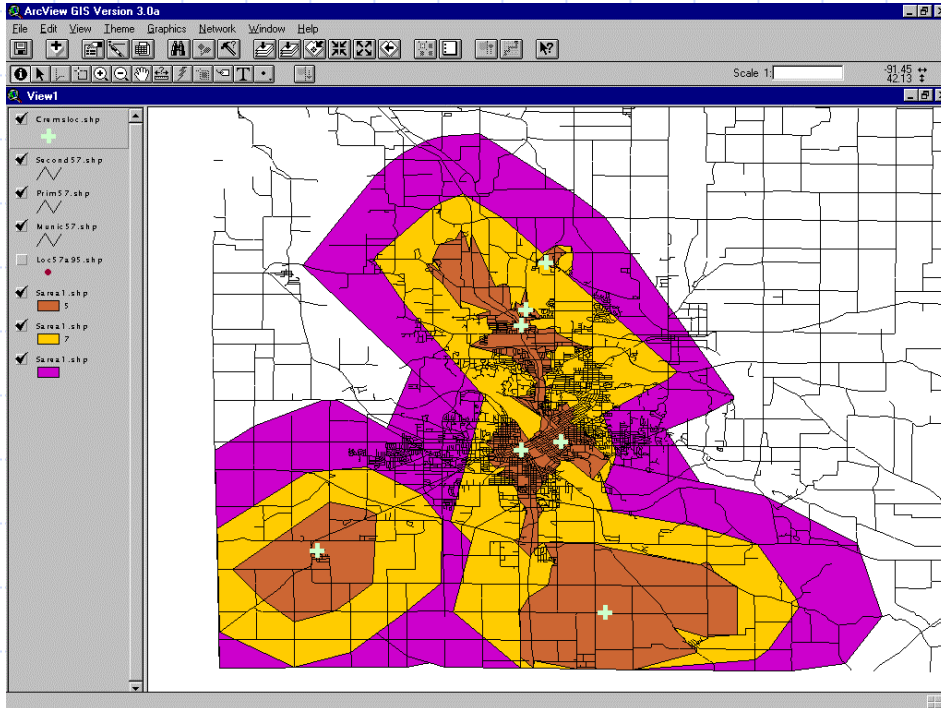
Vehicle Info

Equipment Info

Record: 1 of 8



# Emergency Response Times





# For more information...

Iowa DOT: <http://www.dot.state.ia.us/>

ALAS tools: <http://www.dot.state.ia.us/alas/>

Iowa SMS: <http://www.iowasms.org/>

CTRE: <http://www.ctre.iastate.edu/>

ITSDS: <http://www.ctre.iastate.edu/itsds/>